

PATENT  
Attorney Docket No. 207138

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Nakagawa et al.

Application No. 09/705,838

Art Unit: 1771

Examiner: V. S. Chang

Filed: November 3, 2000

For: ADHESIVE TAPE AND  
SUBSTRATE FOR ADHESIVE  
TAPE

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TC 1700

AMENDMENTS TO CLAIMS MADE IN  
RESPONSE TO OFFICE ACTION DATED APRIL 1, 2002

*(Deletions indicated by crossed out text,  
while insertions are indicated by underlined text)*

1. (Amended) An adhesive tape comprising a substrate and an adhesive layer formed on at least one side of the substrate, wherein the substrate comprises an olefin polymer and a flame retardant, but substantially no halogen atom, and the adhesive tape has a thermal deformation at 100°C of not more than 65%,

wherein the olefin polymer comprises the following Component A and Component B:

Component A: a thermoplastic resin having a carbonyl oxygen atom in the molecular skeleton;

Component B: a propylene/ethylene copolymer obtained by multi-step polymerization involving two or more steps;

wherein the Component B has a dynamic storage modulus (E') at 23°C of not less than 200 MPa and less than 400 MPa, a dynamic storage modulus (E') at 80°C of not less than 40 MPa and less than 180 MPa, and a dynamic storage modulus (E') at 120°C of not less than 12 MPa and less than 70 MPa.

3. (Canceled)

4. (Canceled)

5. (Canceled)

12. (Amended) A substrate for an adhesive tape, which comprises an olefin polymer and a flame retardant, but substantially no halogen atom, wherein the olefin polymer comprises the following Component A and Component B:

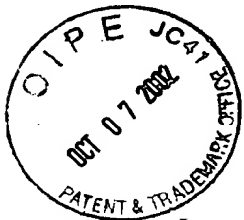
Component A: a thermoplastic resin having a carbonyl oxygen atom in the molecular skeleton;

Component B: ~~a polymer alloy containing an ethylene component and a propylene component~~ propylene/ethylene copolymer obtained by multi-step polymerization involving two or more steps;

wherein the Component B has a dynamic storage modulus (E') at 23°C of not less than 200 MPa and less than 400 MPa, a dynamic storage modulus (E') at 80°C of not less than 40 MPa and less than 180 MPa, and a dynamic storage modulus (E') at 120°C of not less than 12 MPa and less than 70 MPa.

13. (Canceled)

14. (Canceled)



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PENDING CLAIMS AFTER AMENDMENTS  
MADE IN RESPONSE TO OFFICE ACTION DATED APRIL 1, 2002

1. An adhesive tape comprising a substrate and an adhesive layer formed on at least one side of the substrate, wherein the substrate comprises an olefin polymer and a flame retardant, but substantially no halogen atom, and the adhesive tape has a thermal deformation at 100°C of not more than 65%,

wherein the olefin polymer comprises the following Component A and Component B:

Component A: a thermoplastic resin having a carbonyl oxygen atom in the molecular skeleton;

Component B: a propylene/ethylene copolymer obtained by multi-step polymerization involving two or more steps;

wherein the Component B has a dynamic storage modulus (E') at 23°C of not less than 200 MPa and less than 400 MPa, a dynamic storage modulus (E') at 80°C of not less than 40 MPa and less than 180 MPa, and a dynamic storage modulus (E') at 120°C of not less than 12 MPa and less than 70 MPa.

2. The adhesive tape of claim 1, which has an elongation at break of not less than 150% at a tension speed of 300 mm/min.

6. The adhesive tape of claim 3, wherein the Component A is an ethylene copolymer or a metal salt thereof, having a melting point of not more than 120°C, which is obtained by polymerizing a vinyl ester compound, or an  $\alpha$ ,  $\beta$ -unsaturated carboxylic acid or a derivative thereof, or the vinyl ester compound and the  $\alpha$ ,  $\beta$ -unsaturated carboxylic acid or a derivative thereof.

7. The adhesive tape of claim 3, wherein the Component A and the Component B are mixed at a weight ratio (A:B) of 1:9 - 8:2.

8. The adhesive tape of claim 1, wherein the flame retardant is added in an amount of 20 - 200 parts by weight per 100 parts by weight of the olefin polymer.

9. The adhesive tape of claim 1, wherein the flame retardant is a metal hydroxide.

10. The adhesive tape of claim 1, which has a dynamic storage modulus (E') at 80°C of not less than 25 MPa and a dynamic storage modulus (E') at 120°C of not less than 10 MPa.

11. The adhesive tape of claim 1, wherein the substrate is not crosslinked during or after a forming process thereof.

12. A substrate for an adhesive tape, which comprises an olefin polymer and a flame retardant, but substantially no halogen atom, wherein the olefin polymer comprises the following Component A and Component B:

Component A: a thermoplastic resin having a carbonyl oxygen atom in the molecular skeleton;

Component B: a propylene/ethylene copolymer obtained by multi-step polymerization involving two or more steps;

wherein the Component B has a dynamic storage modulus (E') at 23°C of not less than 200 MPa and less than 400 MPa, a dynamic storage modulus (E') at 80°C of not less than 40 MPa and less than 180 MPa, and a dynamic storage modulus (E') at 120°C of not less than 12 MPa and less than 70 MPa.

15. The substrate of claim 12, wherein the Component A is an ethylene copolymer or a metal salt thereof, having a melting point of not more than 120°C, which is obtained by polymerizing a vinyl ester compound, or an  $\alpha$ ,  $\beta$ -unsaturated carboxylic acid or a derivative thereof, or the vinyl ester compound and the  $\alpha$ ,  $\beta$ -unsaturated carboxylic acid or a derivative thereof.

16. The substrate of claim 12, wherein the Component A and the Component B are mixed at a weight ratio (A:B) of 1:9 - 8:2.
17. The substrate of claim 12, wherein the flame retardant is added in an amount of 20 - 200 parts by weight per 100 parts by weight of the olefin polymer.
18. The substrate of claim 12, wherein the flame retardant is a metal hydroxide.
19. The substrate of claim 12, which has a dynamic storage modulus (E') at 80°C of not less than 25 MPa and a dynamic storage modulus (E') at 120°C of not less than 10 MPa.
20. The substrate of claim 12, which is not crosslinked during or after a forming process thereof.